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Conjugated diene polymer useful in the preparation of rubber composition
has specified degree of cis-1,4-bond and 1,2-vinyl bond

Patent Assignee: JSR CORP (JAPS)

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Number of Countries: 028 Number of Patents: 003

Patent Family:

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EP 1099710	A1	20010516	EP 2000309937	A	20001109	200146 B
JP 2001139603	A	20010522	JP 99322369	A	19991112	200146
US 20030065083	A1	20030403	US 2000709562	A	20001113	200325
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Patent Details:

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Abstract (Basic): EP 1099710 A1

NOVELTY - A conjugated diene polymer has a cis-1,4-bond of not less than 85%, a 1,2-vinyl bond of not more than 2.0% and a ratio of weight average molecular weight (Mw) to number average molecular weight (Mn) of not more than 5. The polymer comprises at least one epoxy or hydroxyl group.

DETAILED DESCRIPTION - An INDEPENDENT CLAIM is included for a rubber composition comprising (parts by weight): silica (10 - 200) based on 100 parts by weight of rubber ingredient. The rubber

ingredient consists of (wt.%): the conjugated diene polymer (A) (10-100) and other diene polymer or natural rubber (0 - 90).

USE - In rubber compositions (claimed), which are useful for manufacturing tire tread, under tread, carcass, sidewall, bead portion, hoses, belt, shoe bottom, window frame, sealing member, vibration damping rubbers and other industrial goods.

ADVANTAGE - The rubber composition has excellent wear resistance, mechanical properties and low heat build-up.

pp; 22 DwgNo 0/0

Technology Focus:

TECHNOLOGY FOCUS - POLYMERS - Preferred Components: (A) comprises at least one epoxy group. (A) is obtained by polymerizing a conjugated diene with a catalyst, and further reacting with a hydroxyl group containing vinyl compound (B) or an epoxy compound (C). The catalyst comprises: (a) a compound containing a rare earth element having atomic number 57 - 71, or a reaction product of these compounds and a Lewis base; (b) an aluminoxane and/or an organoaluminum of formula AlR₁R₂R₃; and (c) a halogen-containing compound.

R₁ and R₂=H or 1-10C hydrocarbon;

R₃=1-10C hydrocarbon.

Preferred Composition: The rubber composition additionally comprises (parts by weight): silane coupling agent (1 - 20) based on 100 parts by weight of the rubber ingredient.

ORGANIC CHEMISTRY - Preferred Compounds: The compound containing the rare earth element is a carboxylate, an alkoxide, a beta-diketone complex, a phosphate or a phosphite. The aluminoxane is methylaluminoxane, ethylaluminoxane, n-propylaluminoxane, n-butylaluminoxane, isobutylaluminoxane, tert-butylaluminoxane, hexylaluminoxane or isoheptylaluminoxane. The halogen-containing compound is a reaction product of a metal halide and a Lewis base. The Lewis base is a phosphoric ester, a diketone compound, a carboxylic acid and/or an alcohol. The amount of (a) is from 0.00001 - 1.0 mmol per 100 g of the conjugated diene. The molar ratio of (a):(b) is 1:1 - 1:500. The molar ratio of (a):(c) is 1:0.1 - 1:30. The molar ratio of (B) or (C):(a) is 0.01 - 200.

INORGANIC CHEMISTRY - Preferred Compounds: The rare earth element

is neodymium, praseodymium, cerium, lanthanum or gadolinium. The metal of the metal halide is group IA, IIA and/or VIIIB element.

Title Terms: CONJUGATE; DIENE; POLYMER; USEFUL; PREPARATION; RUBBER; COMPOSITION; SPECIFIED; DEGREE; CIS; BOND; VINYL; BOND

Derwent Class: A12

International Patent Class (Main): C08C-019/00; C08K-005/24

International Patent Class (Additional): C08C-019/28; C08C-019/44; C08G-014/04; C08G-059/68; C08K-003/34; C08K-003/36; C08K-005/54; C08K-013/02; C08L-009/00

File Segment: CPI

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Polymer Indexing (PS):

<01>

001 018; G0817-R D01 D51 D54 D57; G0839 G0828 G0817 D01 D12 D10 D51 D54 D56 D02 D58 D85 D86 D90; R00806 G0828 G0817 D01 D02 D12 D10 D51 D54

D56 D58 D84; R00429 G0828 G0817 D01 D02 D12 D10 D51 D54 D56 D58 D85

; R01353 G0917 G0817 D01 D02 D14 D13 D31 D51 D54 D56 D59 D75 D85;

H0000; H0124-R; L9999 L2506-R; L9999 L2573 L2506; L9999 L2299;

L9999 L2391; L9999 L2175; L9999 L2324; M9999 M2175; M9999 M2324;

M9999 M2299; L9999 L2664 L2506; S9999 S1627 S1605; P0328 ; P0339

002 018; ND04; K9449; K9745-R; Q9999 Q9256-R Q9212; Q9999 Q7909 Q7885;

Q9999 Q8731 Q8719; Q9999 Q9358; Q9999 Q7067 Q7056; Q9999 Q7954

Q7885; Q9999 Q9007; Q9999 Q9018; ND01

003 018; B9999 B5050 B5038 B4977 B4740; B9999 B5061 B5038 B4977 B4740;

B9999 B5083 B4977 B4740; B9999 B5094 B4977 B4740; B9999 B5118 B5107

B4977 B4740; J9999 J2926 J2915; N9999 N6655-R; N9999 N6779 N6735

N6655; N9999 N6780-R N6655; N9999 N6893 N6655; B9999 B4535; N9999

N6939-R; B9999 B3554-R; B9999 B3838-R B3747; B9999 B3907 B3838

B3747; B9999 B5287 B5276; B9999 B4171 B4091 B3838 B3747; B9999

B3747-R; B9999 B3747-R; B9999 B5505-R

004 018; H0226

005 018; 9A-R Tr Nd 9A Pr La Ce Gd F23 F52 F53 D00 D01 D10-R D60 D63

F35-R F41-R; C999 C033 C000; C999 C293

006 018; D01 D68 Al 3A O- 6A; C999 C124 C113; C999 C293

007 018; D00 D70 1A-R 2A-R 7B-R Tr 1B-R 2B-R Zn 2B 7A-R Cl 7A; R01703

D00 D70 Zn 2B Tr Cl 7A; C999 C146 C113; C999 C293; S9999 S1627
S1605

008 018; D01 D11 D10 D19 D18 D31 D76 D50 D93 F31 F30; C999 C204; C999
C293; S9999 S1627 S1605

009 018; R01694 D00 F20 O- 6A Si 4A; A999 A237

010 018; R00913 D01 D02 D14 D13 D31 D50 D76 D86; A999 A475

011 018; F83 F86 Si 4A; A999 A033

<02>

001 018; R24073 D01 D02 D03 D12 D10 D51 D53 D59 D85 P0599 H0124 B5061

002 018; ND04; K9449; K9745-R; Q9999 Q9256-R Q9212; Q9999 Q7909 Q7885;
Q9999 Q8731 Q8719; Q9999 Q9358; Q9999 Q7067 Q7056; Q9999 Q7954
Q7885; Q9999 Q9007; Q9999 Q9018; ND01

003 018; R01694 D00 F20 O- 6A Si 4A; A999 A237

004 018; F83 F86 Si 4A; A999 A033

<03>

001 018; P1923 P1912 D01 D10 D11 D50 D68 D81 Al 3A O- 6A

002 018; D01 D11 D10 D50 D68 D82 D83 D84 D86 Al 3A O- 6A; P1912 D01 Al
3A O- 6A

003 018; ND01; Q9999 Q6917